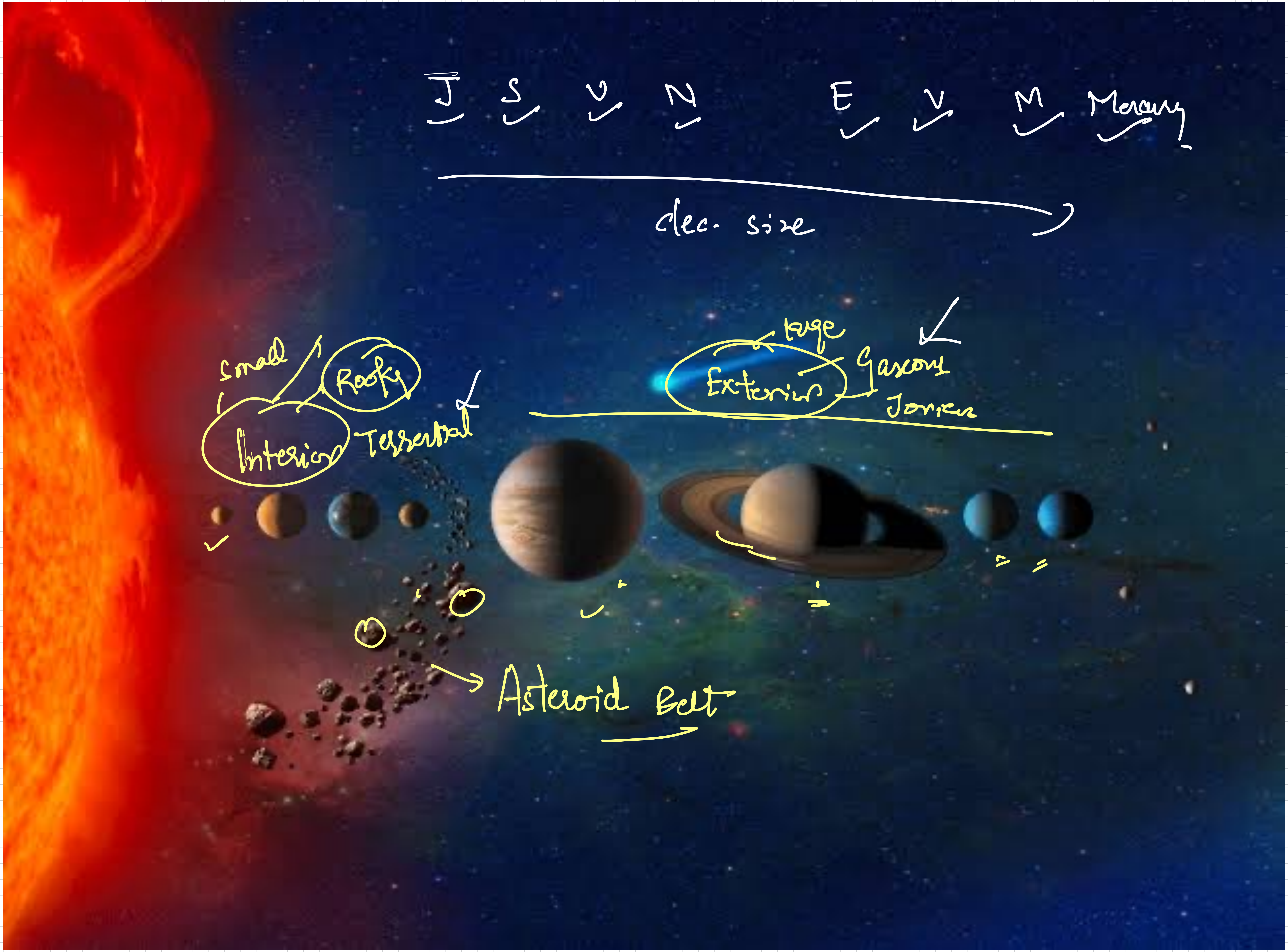

J S U N E V M Mercury
dec. size
small
Rocky
Interior
Terrestrial
large
Exterior
Gaseous
Jovian
Asteroid Belt

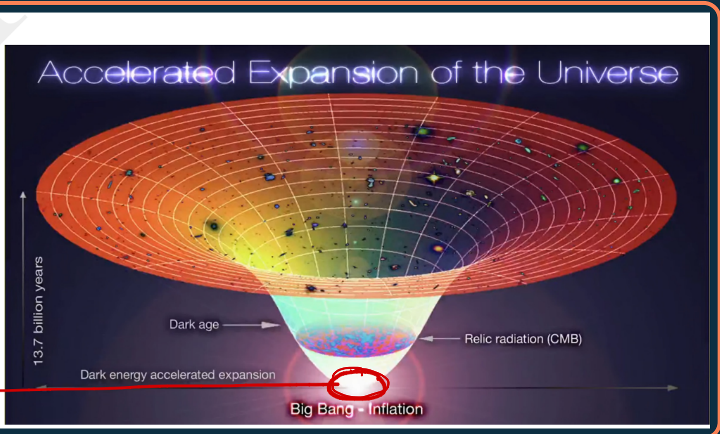
Solar System

Jupiter > Saturn > Uranus > Neptune > Earth > Venus > Mars > Mercury

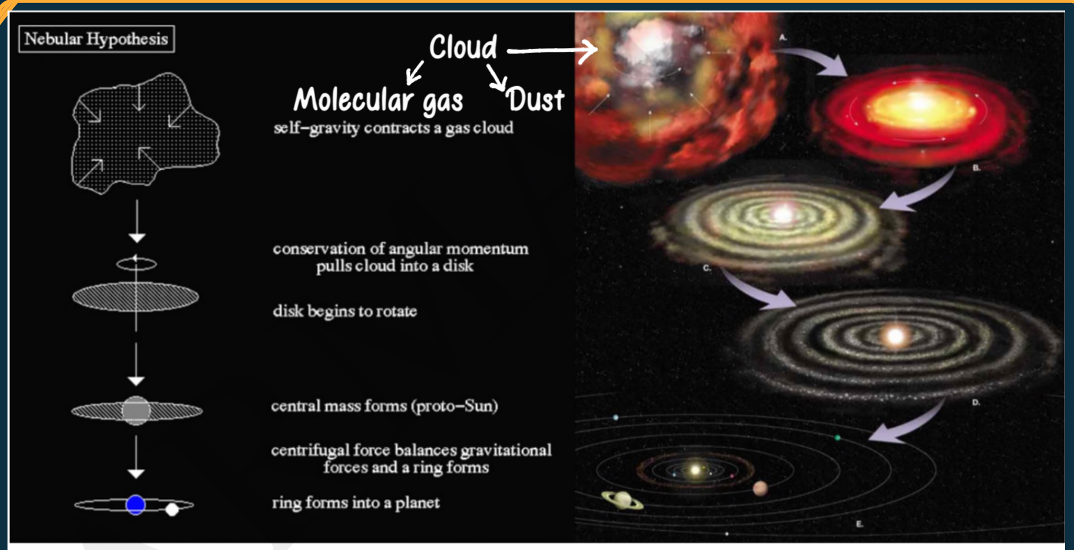
Origin of UNIVERSE

Theories given:
- BIG BANG THEORY — George Lemaître (1927) (1931)
- Steady state theory — Fred Hoyle

Infinitely hot and dense single point → Exploded



Origin of SOLAR SYSTEM



H_2 + He → Nuclear Fusion

H + H → He → Formation of Sun (mostly made of H_2 and He) → H_2 → 70%

Nebular Theory - 1755 - by Immanuel Kant; 1796 - modified by Laplace

- 1543 → Heliocentric theory — Copernicus
- 1905 — planetesimal theory — Thomas Chamberlin, forest ray moulton

Dwarf Planets

- **Pluto** (Clyde Tombaugh)
  - No more a planet in 2006 by International Astronomical Union (IAU)
  - It is a member of Kuiper Belt
  - Kuiper Belt is a spherical boundarg outsde the orbit Of Neptune containing a number of asterod$ rocks and comets
  - Pluto's largest satellite - Charon
  - 1 revolution = 248 Earth years
- **Eris**
  - 2nd largest dwarf planet
- **Haumea**
  - Fastest rotating in Kuiper belt
- **Makemake**
  - 3rd largest dwarf planet
  - 1 revolution = 310 years
- **Ceres**
  - Asteroid belt

Neptune

- Farthest planet & slowest revolution (165 years)
- known as - Ice Giant & Windiest planet
- Atmosphere has Hydrogen, Helium
- Bluish in colour due to Methane
- Discovered by Johann Galle and Urbain Le Verrier in 1846 (only planet found by Mathematical Predictions)
- Has 14 satellites famous moon - Triton

Uranus

- Green Planet (due to Methane)
- Discovered by William Herschel in 1781
- Known as - Ice Giant
- Atmosphere has Hydrogen, Helium, Water, Ammonia, Methane
- Coldest planet
- tilted 98 degree at its axis known as - Rolling/Lopsided Planet
- Rotates clockwise like Venus

Saturn

- Second largest planet
- Has bright & concentric rings made of tiny rocks, gas, dust, ice
- least dense planet (0.69 g/cm³)
- Largest satellite - Titan
- 1655 - Huygenes (discover Saturn's rings)
- 1675 - Cassini (discovered Cassini divisions)

Jupiter

- Largest planet shortest rotation (10 hours)
- Atmosphere has Hydrogen, Helium, other gases
- Third brightest after Moon & Venus
- Largest satellites - Lo, Europa, Callisto & Ganymede (largest among all) (all discovered by Galileo) → 1610
- Has unclear ring around it
- Red spot

Mars

- Known as - Red Planet (Iron Oxide (FeO))
- 2nd smallest planet
- Two satellite - Phobos & Deimos
- Largest Volcano & tallest mountain - Olympus Mons

Earth

- only planet to give support to life
- known as - Blue Planet (70% water)
- one satellite - Moon
- Densest in the entire solar system (5.5 g/cm³)

Venus

- Hottest planet in solar system due to cluds of H_2SO_4 & CO_2
- known as Lucifer (Brightest planet)
- known as - Evening Star & Morning Star
- No satellite
- Earth's Twin (similar mass & size)
- Rotates clockwise (Uranus, E-W)
- Roman goddess
- 243 days — 1 Rotation

Mercury

- Closest planet to Sun
- Smallest planet in solar system
- Diameter: 4900 km
- Fastest revolution - takes 88 days
- Planet with no satellite
- only planet with no Atmosphere

Moon

: Mons Huygens

- Earth's natural satellite
- Non-Luminous
- Radii - 1.74 x 10^6 km
- Time taken by light to reach Earth - 1.26sec.
- Distance b/w Earth & Moon = 3,84,000 km
- Earth's gravity = 6 times Moon's gravity
- Rotation = Revolution = 27.3 days (same)
- Only one side of the Moon is visible (far side)

Sun

- only star in our solar system
- powerhouse of solar system
- Composed of Hydrogen (73%), Helium (25%) and other metals
- Carries 99% mass of our solar system
- Approx 109 times Earth size
- Light takes 8min. 20sec. to reach Earth; Speed of light - 3 lakh km/sec
- Temperature at surface = 5800 K/5600 C
- Temperature at centre = 15.7 million K
- Outer layer - CORONA

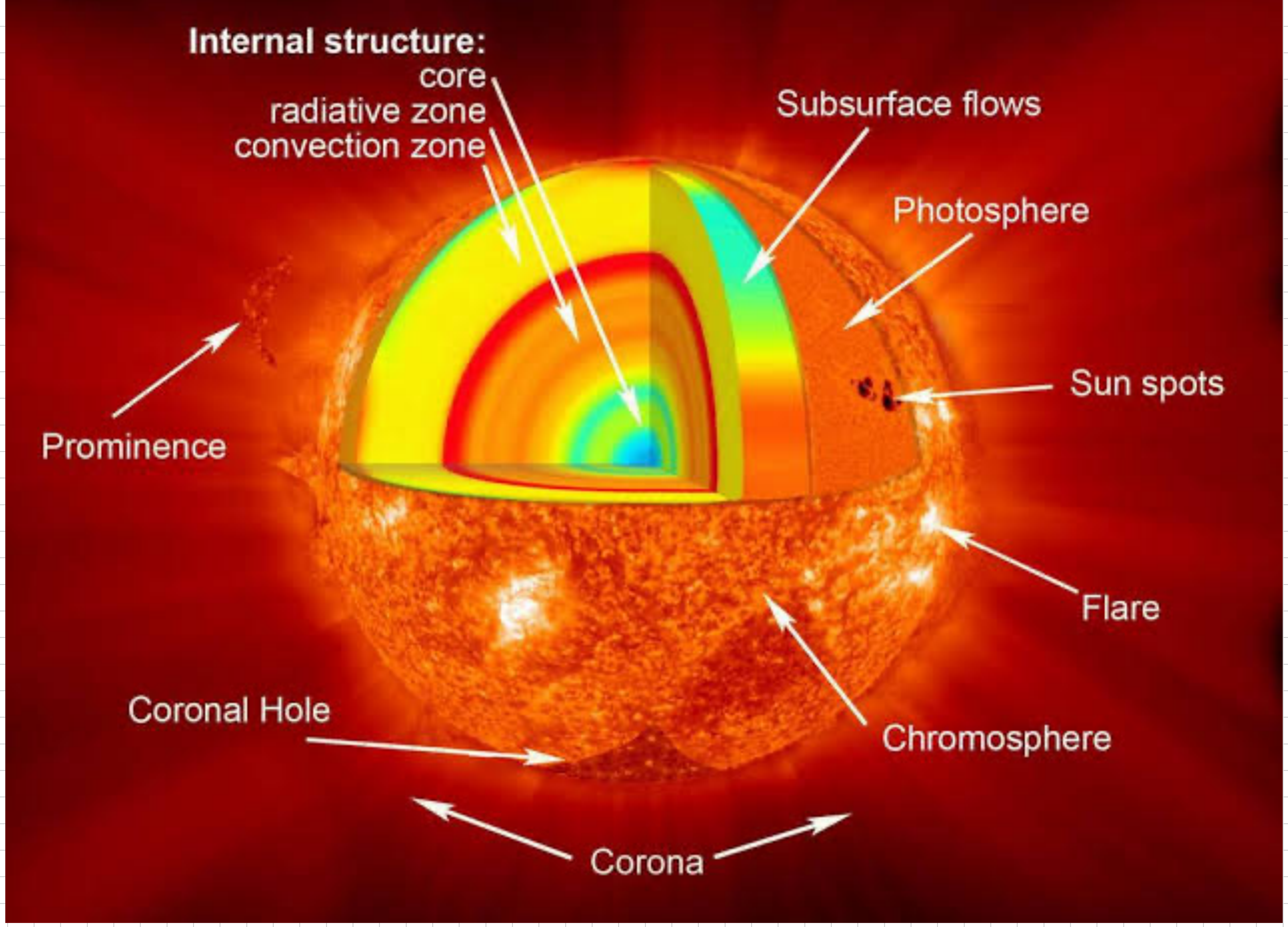
glowing part: photosphere — Solar flares

Sun spot: darker part of Sun (cooler)

CELESTIAL BODIES

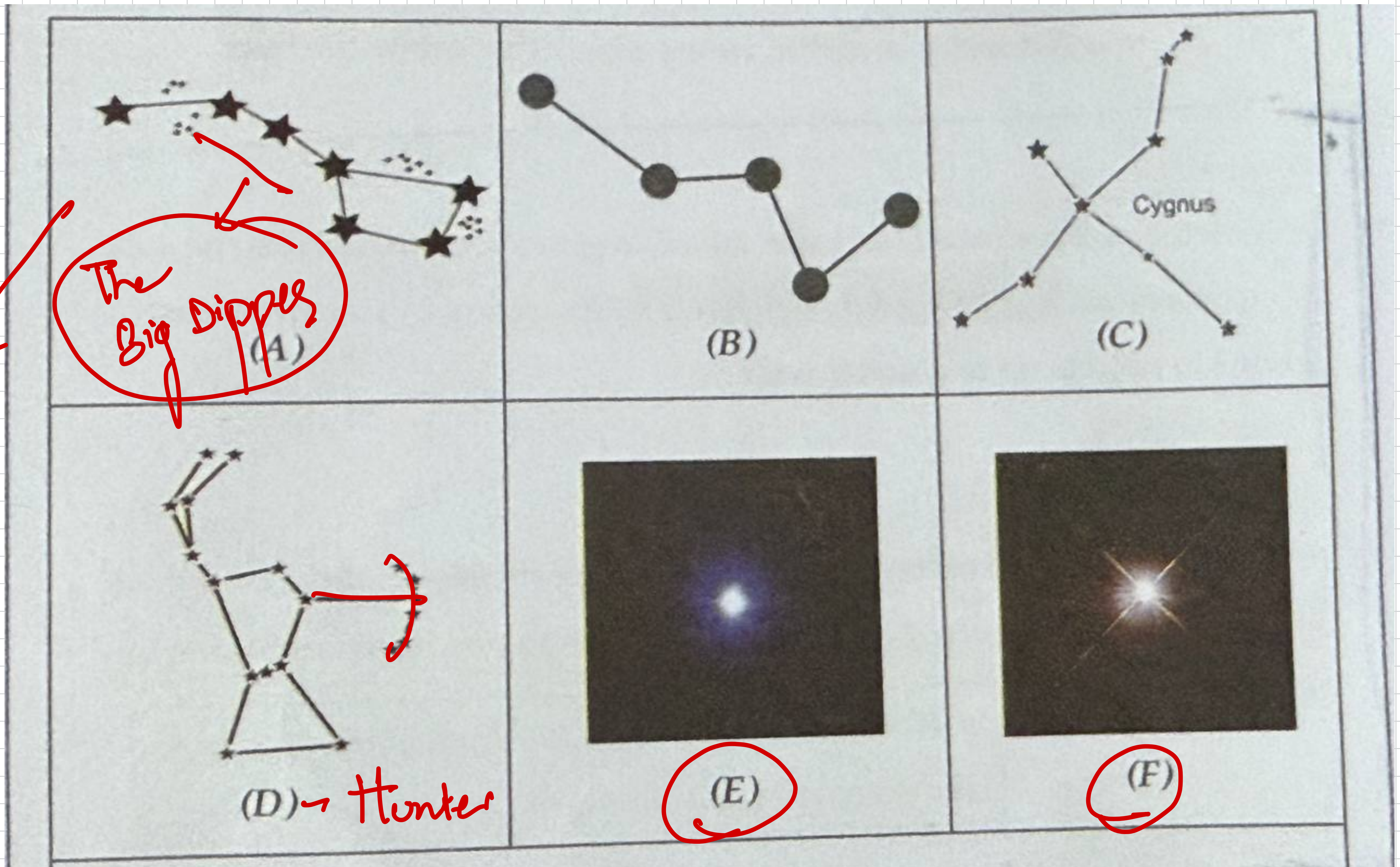
- **Luminous** — Self-glowing — Stars
- **Non-Luminous** — Not self-glowing, but can reflect light from other sources (Moon)
- **Asteroids** — small, rocky objects that orbit the Sun
- **Meteoroids / Meteors** — enters Earth's atmosphere and burn up in Mesosphere
- **Comet** — Small icy dirt balls that orbit the Sun, burn upon reaching Sun (Halley's comet, 75-76 yrs)
- **Stars**
  - Constellation
    - Group of stars
    - Largest - Hydra
    - Urja Major - Sapta Rishi
  - Rigel - Brightest star in Orion Constellation
  - Sirius (Dog Star) - Brightest star in night sky
  - Closest star to Earth - Sun; Distance: 150 million km (1.5 x 10^8 km)
  - Closest star to Sun - Proxima Centuri

PARMAR SSC



1. MCQs
2. Telegram
3. feedback
4. Doubt

Thanks!



asterism

pole star

polaris

Sagittarius

Bow & arrow

Fig 6: Major Constellations (A) Ursa Major; (B) Cassiopeia; (C) Cygnus; (D) Orion; (E) Sirius; (F) Proxima Centauri → near